TCT-268

Immediate coronARy angiogRaphy after ventricular fibrillation out-of-hospital cardiac arreST (ARREST): A Randomised Controlled Trial (ISRCTN 96585404)

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BACKGROUND Out-of-hospital cardiac arrest (OHCA) is a major public health burden; annual incidence in the UK alone is estimated at 50,000;(1) healthcare costs and resource expenditure - based on emergency response, hospitalization and long-term care of survivors- are huge; one cost estimate placed the figure at $33 billion pa in the US.(2, 3) Prediction and prevention remain a challenge: more than half of OHCA presenting as the index cardiac event.(4,5) In resuscitated OHCA with electrocardiographic (ECG) evidence of ST-segment elevation myocardial infarction (STEMI) a growing body of observational data supports immediate coronary angiography with good outcomes; likely driven by access to facilities to diagnose and treat the precipitating pathology of arrest (coronary angiography+/-PCI) and sophisticated post-cardiac arrest care; however, the management of patients without ST elevation on the post resuscitation ECG or those with refractory arrhythmias is less well defined. The question as to whether all OHCA patients may benefit from immediate coronary angiography and specialist care remains unanswered and there is urgent need for a randomized controlled trial. We propose testing a prehospital pathway that delivers emergency care with destination therapy: delivery of the patient directly to a HAC to receive immediate coronary angiography +/-PCI.

METHODS Hypothesis: Expedited transfer of patients to a HAC using a hyperinvasive strategy of immediate coronary angiography +/-PCI following out-of-hospital ventricular fibrillation arrest will confer a survival benefit compared to the current standard of care. Methods: Prospective, pan-London, multi-center, randomized control trial. Patients with OHCA are randomized to one of two of the study arms: control (standard of care) or intervention (straight to HAC for immediate coronary angiography). The Pilot Study of 10 patients was conducted between Nov 2014 and March 2015, at a single UK site, randomized 1:1 to either immediate coronary angiography (n=5) or standard of care (n=5). Inclusion Criteria: Witnessed OHCA; pulseless VT/VF; age>18; absence of non-cardiac cause (trauma, drowning). Exclusion Criteria: ST-Elevation myocardial infarction on 12-Lead ECG; Pulseless Electrical Activity (PEA)/ Asystole; DNAR; suspected pregnancy. Primary Outcome: All-cause mortality 30 days. Secondary: All-cause mortality 6, 12 months; neurological status at discharge (capped at 30 days); major adverse cardiovascular & cerebrovascular events (MACCE).

RESULTS Pilot study patient demographics and outcomes; *full data extraction pending on 2 patients; abbreviations: CPR cardiopulmonary resuscitation, ROSC return of spontaneous circulation, MACCE major adverse cardiovascular and cerebrovascular event, LVEF left ventricular ejection fraction.

CONCLUSIONS This pilot was hugely informative, demonstrating feasibility of pre-hospital randomization and in-hospital care pathways and ease of recruitment. Full trial recruitment (N=360) has commenced.

CATEGORIES OTHER: Pre-Clinical/First In-Human Studies

KEYWORDS Cardiac arrest, Coronary angiography

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Short term outcome of Everolimus eluting Bioabsorbable Vascular Scaffold (BVS) in the management of ST-segment Elevation Myocardial Infarction (STEMI) - A real world experience

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BACKGROUND Although recent studies have demonstrated the safety & efficacy of everolimus eluting bioabsorbable vascular scaffold (BVS) in the management of stable coronary artery disease (CAD), but there is lack of data regarding use of BVS for primary percutaneous coronary intervention (PCI) in management ST segment elevation myocardial infarction (STEMI). Aims: To evaluate immediate & short term safety and efficacy of the everolimus-eluting BVS in patients with STEMI.

METHODS It is a prospective non-randomized single center observational study. From January 2013 to February 2015, patients with STEMI who received BVS implantation during primary PCI were included in this study. Patients with Cardiogenic shock, with coexistent severe noncardiac illness, and small caliber (<2.3mm) or large caliber (>3.7 mm) infarct related vessels were not included.

RESULTS Among 248 patients of primary PCI, 40 patients received BVS stent within this study period. It was a male predominated cohort. Mean age was 59.2 +/- 9 years. Thirty seven percent were smokers, while 31% were diabetics and 27% were hypertensives. Eighty percent patients had single vessel CAD. Femoral access was used in 51% cases. Mean door-to-balloon time was 93 +/- 30 minutes. Anterior wall STEMI was more frequent than inferior wall STEMI involving right coronary artery territory. Mean BVS length and BVS diameter per patient was 24.6 +/- 4.7 mm and 3.2 +/- 0.3 mm, respectively. About 66% patients received thromboaspiration during PCI and thrombolysis in myocardial infarction (TIMI) III flow was achieved in 94% patients. Four patients had intravascular imaging. Procedural success was achieved in 94% patients. Only one case had non cardiac death within one month. All had a regular clinical follow up till May 2015. Twenty eight percent patients had follow up angiogram within mean period of 8 +/- 2.7 months. In all scaffold was functioning well.

CONCLUSIONS The use of the Absorb BVS in this cohort reflecting day-to-day real world clinical practice is feasible and associated with good procedural safety and angiographic success rate. In addition, mean 10+/- 4.8 month follow-up showed acceptable clinical outcomes. From efficacy and safety viewpoints BVS may be a considered option in primary PCI for STEMI.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Bioabsorbable scaffolds

TCT-270

Earlier Complete Revascularization Improve the Long Term Outcome of Primary Coronary Intervention for Patients with ST Elevation Myocardial Infarction and Multi-vessel disease

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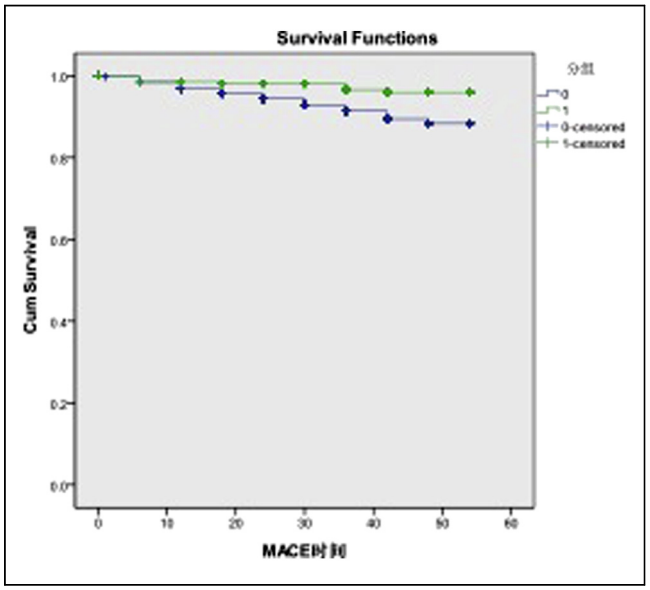
BACKGROUND To investigate the clinical safety and long-term outcomes of earlier complete revascularization for multivessel disease (MVD) after primary percutaneous coronary intervention(PCI).

METHODS A total of 704 patients treated with primary angioplasty by drug eluting stents for ST-elevation myocardial infarction with MVD were enrolled from January 2009 to December 2012 and were divided into two groups. 425 patients underwent PCI of the infarct-related artery only (Infarct vessel PCI group); 279 patients underwent same time or stage PCI of non-target vessel and achieved complete revascularization within seven days of primary PCI at index admission (Multivessel PCI). The clinical safety and long-term outcomes of all patients were evaluated.

RESULTS Baseline characteristics were similar between two groups. At a median of 3.4 years of follow up, compared with multivessel PCI, PCI restricted to the infarct-related artery only was associated with higher rate of MACE (Major adverse cardiac event: Death and MI 3.2% vs. 7.3%, P<0.05)However, no difference was found for target vessel revascularization recurrence and stroke in these two groups. Kaplan Meier curve showed that MACE free survival was much higher in multivessel PCI group (93% vs. 90% P<0.05). Results of Cox regression models revealed that multivessel PCI was the protective factor for patients (RR=0.393, 95%CI: 0.181-0.854), chronic renal failure (RR = 11.725 95%CI: 4.141-33.200) and Killip ≥3 (RR=4.514, 95%CI: 1.558-13.081) were the negative predicative factor for MACE.

	Multivessel PCI (n=279)	Culprit vessel PCI (n=425)	P value
Follow up			
Death	5 (2.0)	15 (4.0)	>0.05
AMI	4 (1.6)	16 (4.3)	>0.05
TVR	17 (6.7)	18 (4.8)	>0.05
Stroke	9 (3.5)	9 (2.4)	>0.05
MACE (Death and MI)	9 (3.5)	30 (8.0)	<0.05



CONCLUSIONS It is safe and possible to obtain an ideal clinical outcome by earlier complete revascularization after primary PCI for STEMI patients with multivessel disease.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Acute myocardial infarction, Complete coronary revascularization, Primary percutaneous coronary intervention

TCT-271

Inducing Angiogenesis With A Trans-coronary Sinus Catheter Intervention (PICSO) In A Porcine Ischemia/Reperfusion Model

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BACKGROUND Activating cardio venous endothelium with a trans-coronary sinus catheter intervention (PICSO) by mechanotransduction and reversing blood flow in coronary circulation, not only reduces ischemia and microvascular obstruction, but may also reopen pathways for endogenous repair. We assessed the hypothesis that a coronary sinus catheter intervention substantiates angiogenesis in an ischemia/reperfusion model.

METHODS 32 open chest pigs received: sham-operation (n=3); PICSO normal perfusion (PICSO-A, n=10); Infarct and reperfusion (control-group, n=8), ischemia and reperfusion with PICSO (PICSO-B, n=11). LAD was occluded for 3 hours followed by 1 hour reperfusion. Duration of PICSO was 4 hours in normal hearts and was induced after 30 minutes ischemia continuing through reperfusion (3.5 hours). Specimen were taken from: LAD region (infarct), adjacent zones Border1 and 2, Circumflex region remote R, Right ventricle RV. VEGFR1, 2 positive arteries and veins were calculated as percentage of total number of vessels using confocal-microscopy.

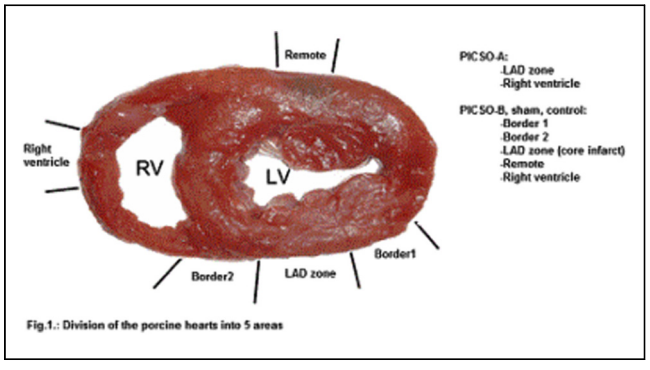

Fig.1.: Division of the porcine hearts into 5 areas

RESULTS VEGFR1 was significantly upregulated in arteries and veins of Border1 in PICSO-B, during normal blood flow in LAD regions of PICSO-A and RV in both interventional groups as compared to controls ($p<0.05$). VEGFR2 expression in arteries was significantly upregulated in Border1 ($p<0.001$) and Border2 ($p<0.05$) in PICSO-B as compared to controls and in arteries of LAD and RV areas of both PICSO groups as compared to control ($p<0.05$), whereas no upregulation was found in arteries in R. Significant upregulation could be found in veins in all areas of the PICSO groups as compared to control and sham-operated animals ($p<0.05$).

CONCLUSIONS Significant upregulation of angiogenesis proteins in coronary vessels by activation of PICSO in arteries and veins induces regenerative pathways leading to induction of angiogenesis and structural repair. The trans-coronary sinus catheter intervention PICSO induces structural repair besides as a dual mechanism together with its salvaging effect in acute myocardial injury.

CATEGORIES CORONARY: Cell Therapy and Angiogenesis

KEYWORDS Angiogenesis, Coronary interventions, Ischemia reperfusion

TCT-272

Everolimus-eluting stent versus bare-metal stent in diabetic patients with ST-segment elevation myocardial infarction. Insights from the EXAMINATION trial

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BACKGROUND The examination study was a multicenter prospective all-comers randomized controlled trial that compared Everolimus-eluting stent (EES) versus Bare-metal stent (BMS) in patients with STEMI. The aim of this study was to compare 1-year clinical outcomes after EES implantation compared with BMS in patients with diabetes (DM) included in the EXAMINATION trial.

METHODS Of the 1498 patients included, 258 patients were diabetic (EES=137, BMS= 121) and 1239 were not (EES=613, BMS=626). The primary endpoint was the patient-oriented combined endpoint (POCE) and secondary endpoints included the device oriented endpoint (DOCE) and other clinical parameters. The analysis of the clinical outcome at 1year was stratified by backward Cox-regression models including those variables with a $p<0.1$ or clinically relevant.

RESULTS Patients with DM presented worse baseline clinical characteristics than non diabetics. At 1 year, POCE was significantly higher in DM compared with non-DM (20.2%vs. 11.3%; p=0.001), whereas DOCE was similar between groups (9.7% vs. 6.3%; p=0-6). In the DM subgroup, rates of POCE and DOCE were similar between EES and BMS (19.0% vs. 21.5%; p=0.6 and 9.5% vs. 9.9%; p=0.9, respectively). However, in the EES group, the rate of target lesion revascularization was significantly lower compared with that of the BMS group (2.9% vs. 7.4%; HR: 0.45; 95%CI: 0.24-0.89; p=0.02). Rates of recurrent myocardial infarction and definitive or probable stent thrombosis were similar between groups (1.5% vs. 4.1%;p=0.2 and 2.2% vs. 1.7%; p=0.5, respectively).

CONCLUSIONS At 1 year, EES implantation in diabetics in the setting of STEMI did not reduce the rate of POCE as compared to BMS. However, the use of EES was able to reduce the need for repeat revascularization.

CATEGORIES CORONARY: Diabetes

KEYWORDS Acute myocardial infarction, Diabetes mellitus, Drug-eluting stent, everolimus

TCT-273

Influence Of Ticagrelor Versus Clopidogrel On Hemostatic Measurements, Vascular Function And Left Ventricular Remodeling In STEMI Patients

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BACKGROUND Experimental studies have supported that platelet reactivity is associated with hemostatic measurements, vascular function, and LV remodeling process. The aim of this study was to compare the influence of ticagrelor versus clopidogrel on these components in STEMI patients.